

REMARKS

Applicants thank the Examiner for the thorough consideration given the present application.

Claims 1-15 and 21-22 are pending in the application. Claims 8 and 21 are independent.

Reconsideration of this application is respectfully requested.

Claim Rejections under 35 U.S.C. 102

Claims 1, 8, 21 and 22 stand rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent 6,078,365 to Ueda et al. (hereinafter, "Ueda") in view of U.S. patent 6,529,251 to Hibino et al. ("Hibino"). This rejection is respectfully traversed.

Because the rejection is based on 35 U.S.C. §103, what is in issue in such a rejection is "the invention as a whole," not just a few features of the claimed invention. Under 35 U.S.C. §103, "[a] patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." The determination under §103 is

whether the claimed invention as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. See In re O'Farrell, 853 F.2d 894, 902, 7 USPQ2d 1673, 1680 (Fed. Cir. 1988). In determining obviousness, the invention must be considered as a whole and the claims must be considered in their entirety. See Medtronic, Inc. v. Cardiac Pacemakers, Inc., 721 F.2d 1563, 1567, 220 USPQ 97, 101 (Fed. Cir. 1983).

In rejecting claims under 35 U.S.C. § 103, it is incumbent on the Examiner to establish a factual basis to support the legal conclusion of obviousness. See, In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one of ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal Inc. v. F-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These

showings by the Examiner are an essential part of complying with the burden of presenting a *prima facie* case of obviousness. Note, In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be suggested or taught by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1970). All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

A showing of a suggestion, teaching, or motivation to combine the prior art references is an "essential evidentiary component of an obviousness holding." C.R. Bard, Inc. v. M3 Sys. Inc., 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998). This showing must be clear and particular, and broad conclusory statements about the teaching of multiple references, standing alone, are not "evidence." See In re Dembiczak, 175 F.3d 994 at 1000, 50 USPQ2d 1614 at 1617 (Fed. Cir. 1999).

Moreover, it is well settled that the Office must provide objective evidence of the basis used in a prior art rejection. A factual inquiry whether to modify a

reference must be based on objective evidence of record, not merely conclusory statements of the Examiner. See, In re Lee, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002).

Furthermore, during patent examination, the PTO bears the initial burden of presenting a *prima facie* case of unpatentability. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). If the PTO fails to meet this burden, then the Applicant is entitled to the patent. Only when a *prima facie* case is made, the burden shifts to the applicant to come forward to rebut such a case.

Applicants respectfully submit that claims 1, 8, 21 and 22 recite a combination of features which are neither disclosed nor suggested by either Ueda or Hibino, alone or in combination.

Claims 8 and 21, as amended, positively recite a number of features, including forming and patterning a source electrode and a drain electrode over the first metal layer using a wet etch process; and forming and patterning the first metal layer and the second semiconductor layer in a same pattern by dry-etching using the source and drain electrodes as a mask to expose the active layer between the source and drain electrodes such that the defined outer edge of the first metal layer is lined up with the defined outer edge of the second semiconductor layer to define a separation region and to reduce over-etching

of the first metal layer, which are neither disclosed nor suggested by any of the applied art.

The Office Action clearly admits that Ueda does not disclose the wet etching and dry etching methods, as recited.

In an attempt to remedy this admitted shortcoming of Ueda, the Office Action turns to Hibino, which differs from Ueda in a number of ways.

Firstly, whereas Ueda discloses either a single Mo metal film 79 as a source or drain electrode (cols. 12-13) or a three layered Mo/Al/Mo metal film structure 79 as a source or drain electrode (col. 17), Hibino discloses a two-layer source or drain electrode 19 made up of a lower layer TiN film 20 and an upper layer Al 21.

Secondly, Ueda's source or drain electrode is formed by etching using a resist pattern in a single step. The single Mo metal film layer 79 etched in a single step is disclosed in col. 13, lines 14-21, and the three layered Mo/Al/Mo metal film structure 79 being wet etched in a single step using a resist pattern is disclosed in col. 17, lines 22-30. In Hibino, two layer source or drain electrode 19 is formed in two separate steps, i.e., first the Al layer 21 is wet etched (col. 7, lines 35-45) in a process that does not affect the second TiN layer 20 and, subsequently, after Al film 21 is etched, the lower source TiN electrode 20 is dry etched.(col. 7, lines 50-56).

Thirdly, in Ueda, the metal film layer or layered source or drain electrode 79 is etched separately from the etching of the underlying semiconductor layers (col. 17, lines 22-42, whereas in Hibino, part (21) of the source or drain electrode 19 is etched separately from the underlying semiconductor layers, whereas another part (20) of the source or drain electrode is etched along with the underlying semiconductor layers (col. 7, lines 34-40).

In other words, these two references differ significantly in (1) the nature of the structure of their source and drain electrodes, (2) the order in which the source and drain electrodes or electrode components are etched; (3) the composition of the source and drain electrodes; and (4) the reason why the source and drain electrodes are structured as they are structured.

Applicants respectfully submit that these are significant structural differences and processing differences between these two devices and are the type of specific detailed factors that must be taken into consideration in evaluating whether one of ordinary skill in the art would be properly motivated to modify Ueda in view of Hibino, as suggested.

Unfortunately, the Office Action does not take these detailed differences between these two references into account in providing objective factual evidence that one of ordinary skill in the art would be properly motivated to turn to Hibino to modify Ueda, as suggested in this rejection. Instead of addressing these significant differences between the two applied references,

which is necessary to provide objective factual evidence of proper motivation to make the proposed modification of Ueda in view of Hibino, the rejection merely concludes that it would be obvious to modify Ueda to "add the steps of wet etching followed by dry etching to reduce defects and improve uniformity of TFT properties, as taught by Hibino." Unfortunately, the defects and non-uniformities alleged to be in Ueda that are supposed to be remedied are never mentioned in the rejection, but are left to conjecture and speculation.

In this regard, the problems that Hibino discloses that it is directed to remedying include "problems of the source electrode 57 and the gate electrode 52 of Al materials" that are set forth from col. 2, line 50 to col. 3, line 11. However, the Office Action never establishes that these problems exist in Ueda and thus does not provide proper motivation to remedy problems that the Office Action fails to show exist in Ueda.

The first listed defect that Hibino is directed to remedy is (1) a defect in the gate insulator film 54 [that] causes the gate electrode 52 and the terminal section formed from the gate electrode 52 to be etched during the patterning of the source electrode (col. 2, lines 53-56). The problem is said to be due to the gate electrode and the source electrode being made of Al (col. 2, lines 15-20) Ueda does not mention the existence of such a problem and such a problem does not appear to exist because Ueda uses either a single Mo layer source or drain electrode or a multilayer Mo/Al/Mo source/drain electrode, and Ueda's

gate electrode is a refractory metal such as Cr or Mo-Ta alloy. Thus, this problem does not exist in Ueda and one of ordinary skill in the art would not be motivated to remedy this non-existent problem in Ueda, as suggested.

The second problem listed by Hibino is during patterning of the ITO film pixel electrode 59, the source electrode 57 and the gate electrode 52 erode as the strong liquid etchant seeps through defects in the gate insulator film 54. To remedy this, Hibino disposes the pixel layer above two interlayer insulator layers made of an inorganic insulator film and an organic insulator film. Unfortunately, this problem is not seen to occur in Ueda, who deliberately avoids using a wet etching agent because of known drawbacks for this purpose and, instead etches the ITO pixel electrode film by RIE using methane or alcohol, HI gas, or the like as a main component (col. 17, lines 43-54 of Ueda). Thus, this second problem does not exist in Ueda and one of ordinary skill in the art would not be motivated to remedy this non-existent problem in Ueda, as suggested.

The third problem listed by Hibino is "[I]f the pixel electrode is deposited over an interlayer insulator film having a double-layered structure constituted by an organic insulator film and an inorganic insulator film that are sequentially deposited, available chemical agents are limited by the need to protect the Al material for the Al electrode from erosion during the etching of the thickened organic film (col. 3, lines 1-7 of Hibino)." The solution used by

Hibino, found in col. 3, lines 45-56, etches the organic insulator using a weak alkaline solution. Unfortunately, Ueda does not have such a problem because it does not use just Al electrodes and it does not disclose the double inorganic and organic layer feature to which Hibino's solution is directed. Thus, this third problem does not exist in Ueda and one of ordinary skill in the art would not be motivated to remedy this non-existent problem in Ueda, as suggested.

Moreover, Applicants respectfully submit that the broad-brush approach of this rejection fails to explain exactly what features of Ueda would be subjected to the wet etching and which features would be subject to the dry etching, and fails to explain what the Hibino two-step wet, then dry, etching of separate source/drain electrode layers 21/20 has to do with the single step etching of source/drain electrode 79 of Ueda and why one of ordinary skill in the art would be motivated to change the single etch step of the source/drain electrode 79 of Ueda with the two-step wet, then dry, etching of separate source/drain electrode layers 21/20 of Hibino. Such details are left to speculation and this broad-brush approach fails to provide objective factual evidence of why one of ordinary skill in the art would be motivated to so drastically modify Ueda's processes without an explanation of what improvement would be achieved, if any, and whether the proposed modification would result in any improvement at all.

Furthermore, Applicants respectfully submit that one of ordinary skill in the art would certainly not be properly motivated to modify Ueda's single Mo layer to etch it in a first wet etch process and then in a separate dry etch process, because only one etch process is needed for a single layer electrode. Also, Applicants respectfully submit that one of ordinary skill in the art would certainly not be properly motivated to modify Ueda's or triple Mo/Al/Mo layer source/drain electrode in a first wet etch process and then in a dry etch process because only one etch process is needed to accomplish this and because Ueda does not teach a TiN layer to protect the gate electrode as does Hibino.

Applicants also respectfully submit that this broad-brush basis for motivating a skilled worker is the type that is eschewed by the court in the aforementioned case of In re Dembiczak, and is not a clear and particular rationale, but only constitutes a broad conclusory generic statement that, standing alone, is not "evidence" of proper motivation to modify Ueda in view of Hibino.

Moreover, claim 1 recites an LCD device made by the process of claim 8, and is not rendered obvious at least for the reason that claim 8 is not rendered obvious.

Accordingly, this rejection of claims 1, 8, 21 and 22 is improper and should be withdrawn.

Reconsideration and withdrawal of this rejection are respectfully requested.

Claims 1-15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicants' admitted prior art (APA) in view of Ueda and further in view of Hibino. This rejection is respectfully traversed.

Initially, Applicants note that the statement found on page 13 of the outstanding Office Action that Applicants' arguments with respect to claims 1-15 are moot in view of the new ground(s) of rejection is incorrect regarding this rejection because two-thirds of this rejection of claims 1-15 is repeated word-for-word from the previous rejection of claims 1-15 under 35 USC §103(a) over APA in view Ueda.

Despite this fact, the outstanding office Action completely fails to address any of the detailed arguments presented by Applicants in the Amendment filed on April 3, 2006 traversing the rejection based on APA in view of Ueda.

Applicants respectfully submit that this failure to fully address Applicants' arguments in this regard violates the express requirement in MPEP §707.07(a) to fully respond to Applicants' arguments. For this reason alone, this rejection is improper, must be withdrawn, and the finality of this Office Action must be withdrawn, as the Office Action is patently incomplete.

In response to the merits of this Office Action, Applicants respectfully note Applicants have not admitted that Figures 1-5 are prior art to them. In Fleming v. Giesa (BdPatApp&Int) 13 USPQ2d 1052 (7/17/1989) it was held that for an admission to be used against a party, it must be clear, unequivocal and unmistakable. See also, Harner et al. v. Barron et al., 215 USPQ 743 (Comr Pats 1981), Suh v. Hoefle (BdPatApp&Int) 23 USPQ2d 1321 (4/30/1991), Issidorides v. Ley (BdPatApp&Int) 4 USPQ2d 1854 (4/2/1985) and Ex parte The Successor In Interest Of Robert S. McGaughey (BdPatApp&Int) 6 USPQ2d 1334 (3/4/1988).

All that Applicants have done is to refer to Figs. 1-5 as "Conventional" art. Something can be conventional art in the sense that it is practiced in the real world at the time of Applicants' filing of this Application and yet may not be prior art to Applicants in any sense, including, for example, under 35 U.S.C. §103, which forms the basis for this rejection. See, in this regard, the relatively recent amendments to 35 U.S.C. § 103(c).

Under the circumstances, i.e., where Applicants merely describe Figs. 1-5 as conventional art, the Office Action has not established that Applicants have made a clear, unequivocal and unmistakable admission on the record that what is disclosed in Figs. 1-5 is prior art to Applicants. In this regard, the Examiner is also advised that the initial burden to establish something as prior

art is on the Office as part of its burden of making out a *prima facie* case of unpatentability.

During patent examination the PTO bears the initial burden of presenting a *prima facie* case of unpatentability. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). If the PTO fails to meet this burden, then the Applicant is entitled to the patent. Only when a *prima facie* case is made, the burden shifts to the Applicant to come forward to rebut such a case.

Applicants respectfully submit that the Office has not made out a *prima facie* case of unpatentability at least because it has not made out a *prima facie* case that Figs. 1-5 are prior art to Applicants.

Applicants further traverse this rejection with the following remarks.

The manual of Patent examining Procedure, in general, and MPEP §608.01(c), in particular, clearly states that the background of the invention includes paragraphs “describing . . . the state of the prior art or to other information disclosed known to the applicant . . .” (emphasis added). Clearly, this section of the MPEP readily distinguishes between “prior art” and “other information.” Accordingly, the manual of Patent examining Procedure, including MPEP §608.01(c), cannot logically be used as a basis for concluding that “conventional art” discussed in the Background of the Invention portion of

the specification is prior art just because it is described as such in that portion of the specification. By the express terms of MPEP §608.01(c), “conventional art” disclosed in the background of the invention logically can be “other information,” i.e., not prior art.

Applicants have not listed Figs. 1-5 of this Application on an Information Disclosure Statement. Furthermore, MPEP §609 clearly states that “. . . the filing of an information disclosure statement shall not be construed to be an admission that the information cited in the statement is, or is considered to be, material to patentability as defined in 37 CFR 1.56(b). 37 CFR 1.97(h). See MPEP §2129 regarding admissions by Applicant.” MPEP 2129 clearly points out that listing of a reference in an IDS is not taken as an admission that the reference is prior art against the claims. In this regard, also see Abbott Laboratories v. Baxter Pharmaceutical Products Inc., 67 USPQ2d 1191 (CAFC 2003).

MPEP 2129 also points out that only where the specification identifies work done by another as “prior art” is it treated as admitted prior art. In this case, Applicants have neither stated that the “conventional art” is “by another” or that it is “prior art.” Thus, the only basis on which the MPEP permits one to treat art disclosed in the specification as prior art does not apply to the situation present in this Application.

Applicants respectfully submit that they have not done anything improper, the possibility of which is alleged on page 13 of the Office Action. Applicants are arguing that a statement in the specification by Applicants that something is "conventional art" is not, in and of itself, a clear, unmistakable and unequivocal admission that what is "conventional art" is "prior art," and that the Office Action's conclusion to the contrary is not supported by the sections of the MPEP cited to support that contrary conclusion. In fact, under the circumstances, it is only the Office Action's rejection that is improper in the sense that it improperly treats Applicants Figs. 1-5 and its corresponding description, as admitted prior art to Applicants.

Accordingly, to the extent that this rejection is based on admitted prior art by Applicants, it is improper and should be withdrawn.

Moreover, claim 1, as amended, positively recites a combination of features, including source and drain electrodes over the first metal layer, the source and drain electrodes adapted to be used to pattern by etching the semiconductor layers in the same pattern as the first metal layer to reduce over etching of the first metal layer and to define a first upper portion of the separation region that abuts the lined up outer edges of the first and second semiconductor layers, which are neither disclosed nor suggested by any of the applied art.

Furthermore, claim 8, as amended, positively recites a number of features, including patterning the first metal layer and the second semiconductor layer in a same pattern by etching using the source and drain electrodes as a mask to expose the active layer between the source and drain electrodes such that the defined outer edge of the first metal layer is lined up with the defined outer edge of the second semiconductor layer to define a separation region and to reduce over-etching of the first metal layer, which are neither disclosed nor suggested by APA or Ueda, or Hibino.

Additionally, with respect to claim 1, Applicants respectfully submit that claim 1 positively recites structural features of the source and drain electrodes to define a first upper portion of the separation region that abuts the lined up outer edges of the first and second semiconductor layers, and these positively recited features are neither disclosed nor suggested by any of the applied art.

It is respectfully submitted that the combinations of elements and steps recited in claims 1 and 8 are not disclosed or made obvious by the applied art of record including the alleged APA, Ueda, and Hibino.

Applicants respectfully submit that the Office Action does not make out a *prima facie* case of proper motivation to modify the alleged APA in view of Ueda.

With respect to the APA-Ueda motivation issue, Applicants respectfully submit that Ueda is directed to preventing peeling of a metal mask (col. 2, lines

30-38). However, the "conventional" art disclosed by Applicants is not disclosed as exhibiting that problem.

As stated by the CCPA in the case of *In re Spinnoble*, 56 CCPA 823, 405 F.2d 578, 866 O.G. 341, 160 USPQ 237, 243,

"* * * a patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is part of the 'subject matter as a whole' which should always be considered in determining the obviousness of an invention under 35 U.S.C. 103."

Moreover, just because the references are from the same field of endeavor does not provide proper motivation to modify one in view of the other. A showing of a suggestion, teaching, or motivation to combine the prior art references is an "essential evidentiary component of an obviousness holding." C.R. Bard, Inc. v. M3 Sys. Inc., 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998). This showing must be clear and particular, and broad conclusory statements about the teaching of multiple references, standing alone, are not "evidence." See In re Dembiczak, 175 F.3d 994 at 1000, 50 USPQ2d 1614 at 1617 (Fed. Cir. 1999). In other words, the broad conclusory statement that "ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation" to modify the alleged APA in view of Ueda is not clear and particular enough to constitute evidence of proper motivation.

Applicants also respectfully submit that the office Action fails to make out a *prima facie* case of proper motivation to modify the APA-Ueda reference

combination, which is improper for reasons stated above, in view of Hibino based on the detailed arguments presented above concerning the improper motivation to modify Ueda in view of Hibino with respect to the traversal of the rejection of claims 1, 8, 21 and 22 as unpatentable over Ueda in view of Hibino. Those arguments are incorporated herein as being applicable to the APA-Ueda-Hino reference combination for the same reason that they apply to Ueda.

In view of the forgoing, it is respectfully submitted that the applied prior art of record, including the alleged APA and Ueda and Hibino fail to teach or suggest the combination of elements and steps set forth in claims 1 and 8.

Accordingly, Applicants respectfully submit that the Office Action fails to make out a *prima facie* case of obviousness of the invention recited in claims 1-15 based on APA, Ueda and Hibino.

Reconsideration and withdrawal of this rejection are respectfully requested.

CONCLUSION

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be

withdrawn. It is believed that a full and complete response has been made to the Office Action, and as such, the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Robert J. Webster, Registration No. 46,472, at (703) 205-8000, in the Washington, D.C. area.

Prompt and favorable consideration of this Amendment is respectfully requested.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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